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AUTHOR Cohen, Michael
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ABSTRACT

A critique of research attempting to determine student achievement by identifying the characteristics and resources of schools is offered. It is pointed out that frequently the academic achievement of students is related to the socioeconomic status of the general student population of the school. The suggestion is made that future research should focus largely, though not exclusively, on the social organization of the classroom. Research designed to provide better understanding of the interrelationships in the classroom, grouping practices, reward structures, authority and control structures, the formation and influence of peer groups, and the organization and allocation of time is claimed to be most effective in identifying the relationship between school influence and student achievement. (JD)

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RECENT ADVANCES IN OUR UNDERSTANDING OF SCHOOL EFFECTS RESEARCH

Michael Cohen

National Institute of Education

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What I'd like to do in this presentation is indicate what we've learned from the last decade of research on school effects. As a preview of what follows, I will be suggesting that what we've learned more than anything else is how to do this type of research better than we used to. While this may sound like a cynical conclusion to draw from over ten years of research efforts, I approach this topic with a sense of optimism, and I hope that by the time my presentation is completed, most of you will share my optimism as well.

Critique of School Effects Research

By "school effects" research I refer to that body of literature which attempts to identify those school characteristics and resources which are powerful determinants of student achievement. One of the earliest such studies, and certainly the best known and most widely debated, is the Equality of Educational Opportunity Report (1966), co-authored by James Coleman, Ernest Canpbell and their colleagues. The report has been widely interpreted (misinterpreted, I believe) as concluding that "schools don't make a difference." Much of the scholarly criticism which followed this report was methodological and highly technical in nature, focusing largely on the question of whether the analysis technique employed by Coleman and his colleagues incorrectly assigned the variance in student achievement explained jointly by school and family background factors to family, rather than to school factors. By the time most of the reanalyses had themselves been subject to further criticism, I think most of the research community felt that the challenge to the Coleman report had not been nearly as damaging as most educators, policy-makers

and researchers had hoped they would be. Neither the set of reanalyses reported in Mosteller and Moynihan (1972), nor the research of Jencks and his colleagues reported in Inequality (1972), did much to alter the conclusion that family background contributed much more to student achievement than did school to school differences. The widely held, though not firmly believed, interpretation that schools don't make a difference, still persisted.

While the methogological debates had been useful in sharpening and improving the data analysis and modeling techniques available to researchers, they have not been terribly useful in improving our ability to answer the important policy and theoretical questions which underly the school effects research. And it is these policy questions which remain to be addressed in future research. My purpose here is to suggest a more substantive and theoretical critique of school effects research, in the hopes that out of such a critique will emerge an improved "second generation" of school effects research.

I might add that the perspective I am about to share with you, and the research issues which emerge from it, strongly inform much of the current work and future plans of NIE's Teaching and Instruction Program. My discussion draws heavily from the work of NIE's National Invitational Conference on School Organization and Effects, which was held in January 1978.

Most of the school effects research has been atheoretical in nature, treating school as black boxes, into which flows a set of resources (dollars, teacher abilities and student abilities) and out of which flows some level of student achievement. Because of its atheoretical nature, little, if any, of the school effects research was designed or analyzed to reveal much about the particular resources, instructional processes, reward systems, or activity patterns that account for differences in student achievement. As a result of an absence of guiding theory, much of this research has relied on an overly narrow set of performance indicators in the basic skills areas as the major indicators of student learning. Not only were these indicators insensitive to individual teacher or program materials and efforts, but they also fail to reflect many important aspects of student motivation, attitude, psychological development and other areas of learning which may be influenced by variations in the instructional program or organizational features of schools. Finally, by attempting to explain differences between schools in the average level of student achievement, previous research has typically overlooked the important fact that most of the variance in student achievement (between 70 and 90%) actually occurs within schools. Hence, even a successful school effects study could only account for a small proportion of variance in student achievement. Additionally, by attempting to explain differences between schools in their average level of student achievement, such studies implicitly assumed that all school resources were equally available to, and utilized by, each of the students in the school. Yet we know that within

a given school, teachers vary in their teaching styles, competence, and effectiveness. Also, students are grouped into tracks, and different tracks vary in the access they provide to those teacher skills, curricula materials and social environments which are believed to influence learning.

Insights from School Effects Research

While this critique is generally applicable to most school effects studies, the accumulation of findings from earlier work has provided us with some clues as to how to develop and focus future research:

1) The findings from Coleman et. al. (1966) and supported by a large body of sociological research (see Cohen, 1975 for a review of this work) that the socioeconomic composition of the school is the most powerful school factor influencing student achievement has been interpreted to suggest that the student body in general, and friendship groups in particular, serve as reference groups for students, providing role models, standards of comparison, and expectation systems which influence the academic behavior and achievement of individual students. Additional work in this area (Alexander and Eckland 1973; Davis 1966; Meyer 1970; Nelson 1972) suggests that the ability composition of the school, in interaction with the nature of formal grading, reward and evaluation systems may also serve as powerful influences on student behavior and achievement. Taken together then, it appears that research on formal and informal reward and expectation systems, peer groups, and social influence processes in school is likely to payoff in terms of increased knowledge of the ways in which school factors influence achievement.

2) More recent input-output studies such as those by Murnane (1975), Summers and Wolf (1974), and Alexander and McDill (1976), for example, strongly suggest the utility of looking at within-school rather than between-school sources of influence on student achievement. The Murnane (1975) and Summers and Wolf (1974) studies were able to match student data with data on teachers and classrooms, and generally found classroom effects which are more powerful than previously observed school effects. And the work of Alexander and McDill (1976), Alexander, Cook and McDill (1978), Rosenbaum (1976), Rehberg and Rosenthal (1978), Sorenson (1970), and others directs our attention to the impact of curriculum tracking practices and the internal differentiation of students according to ability and aspirations, as another within school source of variation in the student learning.

3) The work of Wiley (1973), Wiley and Harnischfeger (1974), Thomas (1977), Karweit (1976) and others has given us new ways to think about school resources and their impact on student achievement. Focusing on both teacher and student time, which can vary considerably in the amount available and actually used for instructional purposes, as well as the way it is organized, allocated and differentially available to students within schools and classrooms, has given us new ways to think about a school resource which is potentially manipulable by policy-makers, and which may strongly influence student learning.

When these three factors are taken together, our attention is focused largely on the classroom, rather than the school, and primarily on a set of organizational and social properties of classrooms which

are seen as influencing the flow of educational resources and the nature and mechanisms of social influence among students and between teachers and students. In summary, then, future research needs to focus largely, though not exclusively, on the social organization of the classroom.

Social Organization of Classrooms

By social organization of classrooms, I refer to those structures, processes and systems which are used to sort and group students for instructional purposes; to evaluate, motivate and reward students; to control, constrain and direct student behavior; and to the nature of the instructional tasks and activities themselves. There isn't a coherent, well developed "theory" of the social organization of classrooms, though there are some studies already completed, or currently in progress, which will illustrate the substantive concerns I am referring to. What most of these studies and perspectives share in common, and what tends to distinguish them from much previous research on classroom and teacher effects, is that they implicitly or explicitly recognize two important "facts" about schools and classrooms. The first of these facts is that student attendance in schools is compulsory or, in other words, students are the involuntary clientele of the schools (Bidwell 1971; Spady 1974). The implication of this is that students' willing engagement in the formally prescribed activities of the school must be treated as problematic, rather than taken for granted. This immediately focuses our attention on those structures and processes which are used to influence the motivation and goals of students, and to control or constrain their behavior.

The second of these facts is that classrooms are collective, social settings (Barr and Dreeben, 1977). That is, classrooms are collections of students and one or more adults, each of whom will differ in their interests, goals, motivation, backgrounds, and abilities and prior achievements. It is this collective character of classrooms which makes teaching much more than the simple application of the principals of learning psychology (Barr and Dreeben, 1977). Teaching must be viewed as the act of managing the behavior of individuals in groups. Thus, problems for the teacher may arise because instructional materials and approaches may be appropriate for some, but not all students, and because interactions between individuals (say, the teacher with a misbehaving student), are public occurences observed by other members of the class, whose behavior may well be influenced by the nature of that interaction (Kounin 1970).

With this as background, let me turn to several research efforts which will illustrate the kinds of findings we may anticipate from future studies on the social organization of the classroom.

Reward Structures

As I've already suggested, there is evidence that some combination of formal reward and grading systems and informal peer groups norms can be powerful determinants of student behavior. A series of experiments conducted by David DeVries and Robert Slavin (see DeVries and Slavin 1976, for a summary of this research) at the Center for Social Organization

of Schools suggests just how powerful they can be. They have devised a classroom organization scheme called Teams-Games-Tournaments (TGT), which involves a fundamental reorganization of traditional reward systems and grouping practices in classrooms: Traditionally, the evaluation of student performance has relied on normative, or comparative, standards. A student's grade in a course often depends heavily on the performance of other students in the same course, with the result that grades often pretty much follow a bell shaped distribution. There are several consequences of this type of reward structure. First, the lowest ability students have only a remote probability of getting a high grade, since they are always competing against more advantaged students. To the extent that grades matter to students (and schools and teachers, particularly in the early grades, work hard to have students believe that grades are important (Dreeben, 1968)) over time low ability students generally become less motivated and less inclined to become fully engaged in academic pursuits. Hence, over the course of the schooling career, the gap in achievement between high and low ability students tend to increase. A second consequence of this reward structure is that it may tend to discourage the highest ability students from achieving their maximum. For, with a competitive reward structure, peer groups tend to develop a set of norms which discourage academic involvement and achievement, for high achievement on the part of any one student reduces the odds of good grades for all of the others. As early as 1961, James Coleman, in The Adolescent Society, found that in schools with this type of reward structure, the students with the most prestige

tended to be drawn from the ranks of the athelets rather than scholars, and the students with the highest IQ scores were not the ones with the highest grades.

What TGT does is to change the reward structure in the classroom to even the nature of competition between individuals, and to create incentives for student cooperation at the same time. This is accomplished by dividing students into ability heterogeneous teams which compete against each other in simple instructional games. Rewards, in the form of formal recognition and praise, are distributed to teams on the basis of the collective performance of individual team members. The games are carried out by having individuals from each team compete only against similar ability individuals from the other teams. Hence, the probability for success, particularly for low ability students, is dramatically increased, and each individual on the team, regardless of ability, can contribute to the team's chance for victory. The outcome of this cooperative reward structure, demonstrated in a number of experiments conducted over a range of content areas and grade levels, is a significant increase in achievement, especially for low ability students, an increase in peer tutoring and cooperation, since team members have an incentive to coach each other, and a change in peer group norms, encouraging academic achievement and involvement. Further, when used in racially heterogeneous classrooms, and by creating racially heterogeneous teams, there is also a significant increase in the frequency of cross-race friendship choices. Achievement, motivation,

peer group norms and friendship choices have all been influenced by ingeniously altering the classroom reward structure.

Activity Structures

Another approach to social organization of classrooms relies heavily on an analysis of the structuring of instructional activities. This activity structure perspective, currently being developed by Steve Bossert at the University of Michigan (Bossert, 1978, 1979; see also Dreeben, 1968; Bidwell, 1972; Westbury, 1978) focuses on five distinct but interrelated dimensions of activity:

1) the grouping of students, particularly the extent to which instruction is provided to the whole class as a single group in contrast to the presence of smaller, subgroups within the class;

2) the number and complexity of different tasks students are expected to engage in;

3) the extent to which the successful completion of tasks requires coordinated interdependent behavior on the part of students, in contrast to tasks which require that individuals work independently and in isolation of each other;

4) the extent of student choice involved in selecting and organizing the task; and

5) the nature of the evaluation system, particularly the extent to which evaluation of student performance is public (and therefore

observable by other students), or private; and the extent to which students are working on the identical tasks, and therefore can be evaluated on comparable grounds, or on different tasks which preclude the possibility of comparably based evaluations.

In an exploratory study in which he applied these dimensions simultaneously to two different classrooms, Bossert observed two characteristically different activity structures. One was based largely on whole class instruction and recitation, in which students were exposed to the same instructional materials and activities at the same time, were typically required to work independently, had little choice over the nature, content, or pacing of the instructional work, and were evaluated on a common task and a common standard. In contrast was the multitask activity structure, in which students worked together in small groups, often cooperatively on common tasks. Tasks often varied from group to group, and students experienced some choice and control over their activities. Bossert argues that differences in activity structures produce different roles and expectations for students, and shape their own perceptions of what is appropriate behavior. Activity structures shape the way individuals experience their environment, others, and themselves.

The difference between the classrooms on a number of dimensions were considerable. I will briefly discuss here just two of these dimensions: the meaning of friendship and the bases for choice of friends first, and secondly the mechanisms of controlling student behavior. In the

recitation class, where students were evaluated publicly on a common performance criterion, the relative achievement of each student was quite clear to the others. And students tended to choose their friends on the basis of performance, so that the high performance students in particular formed a coherent and exclusive friendship group. In the multitask classroom, where students were working on a number of different tasks, where evaluations tended to be more private and personal, friendships were formed largely on the basis of student interests, and friendship groups tended to be more fluid and open. Moreover, individuals were willing to work together with a variety of other students, rather than limiting their common academic work exclusively to their friends.

The basis of the teacher's authority varied between the two classrooms as well. As I've suggested before, the fact that students are involuntary clients of the school makes student compliance and motivation problematic, rather than automatic. Teachers may be able to rely on the formal power of their position, and the sanctions available to them as teacher, to control student behavior. However, formal power is also likely to produce student alienation rather than motivation and

commitment to school work. In order to develop motivation, teachers need to develop more personal, affective bonds of trust and rapport with students (Bidwell, 1970; Spady, 1974). And Bossert argues that the activity structure of the classroom influences the form of teacher-pupil bonds which are created, and the type of authority teachers can exercise:

> Teachers who relied on recitation were less able to establish close social ties with their students than were teachers who primarily utilized small group and individualized projects. Recitation places the teacher at the center of control: it forces them to rely on equitable, impersonal sanctions (usually short verbal desists) and on the authority of office rather than on more personalized influence mechanisms. By contrast, small groups and individualized instruction increases opportunities for teachers to covertly "bend" classroom rules to handle individual problems and facilitates teacher involvement in, rather than simply teacher direction of, the activity. This created a considerably stronger sense of rapport between teacher and students than that which occurred in the recitation organized classes (Bossert 1978; p. 46).

Note that one of the implications of this analysis is that the ability of teachers to develop motivation-enhancing bonds with their students may be less dependent upon teacher personality characteristics and teaching styles, and more dependent on the social structure of the classroom.

Organization and Allocation of Time

A third area which I would like to discuss briefly this morning has to do with the increased attention that the use of time in school has received from the research community. Much of this research has focused on the relationship between some version of amount of time (such as time-on-task) and student achievement, demonstrating that, in general, the more time spent on learning activities, the more learning occurs (Carroll, 1963; Bloom, 1979). While this research has been most useful in directing our attention to a school resource which is potentially under the control of decision-makers, the social organization perspective suggests a more complex set of research questions around the organization and allocation of time in classrooms. For example, the collective character of the classroom suggests the importance of the pacing of instruction, and the distribution of time to individual students in the class (Barr and Dreeben, 1977; Thomas, 1977; Karweit, 1978). Particularly in whole class, group instruction, the fact that there will be a range of ability and prior learning on the part of students suggest that the rate at which the teacher introduces and covers new material will affect both the level and distribution of achievement in the classroom. With instruction proceeding at a uniform rate for all students, some will invariably spend time simply waiting for other students to catch up, while others will fall further behind the class (Karweit, 1978). There is some evidence which suggests that teacher use roughly the lower tenth to twentyfifth percentile of achievement as a "steering group" which determines when new material will be introduced

(Dahloff, 1971). We don't know, however, how teachers select the steering group, or what the consequences of selecting different points on the achievement distribution would be.

Further, some of Bossert's work on activity structures suggest that a multitask structure, or some form of within class grouping practices, permit a more flexible use of time which can be tailored to the needs of individual students. The desirability of a flexible use of time is quite consistent with much of the work done on mastery learning by Carroll (1963), Bloom (1968), Block (1971, 1974) and others. It should be clear, by now, however, that in order to use time flexibly in the classroom requires new organizational arrangements, the nature and consequences of which are just now becoming topics for the attention of researchers. As just one example of this type of research, Alan Thomas at the University of Chicago is currently conducting a study which focuses on the effects of a variety of grouping practices and task structures on the distribution of time to individual students within the classroom. More work of this sort needs to be done.

Summary and Implications

What I've tried to illustrate thus far is the importance of studying the social organizational properties of classroom as determinants of student learning. NIE has been supporting some work in this area in the past, and we hope to be able to increase our funding for this type of work in the future. Much of the work which is done in the near future will probably be descriptive in nature, designed to improve our

understanding of the social organization of classrooms, and the inter-relationships among grouping practices, reward structures, authority and control structures, the formation and influence of peer groups, and the organization and allocation of time. With an improved understanding and conceptualization of such structures and processes, researchers will be in a better position to begin to more directly address the question of the effects of variations in the social organization of classrooms on student learning.

While I believe that the social organization of classrooms needs to be the primary focus of research in this area, I'd like to suggest that there are important issues to be raised at the school level as well. Particularly at the secondary school level, there are a number of school wide issues which parallel those which I've described at the classroom level. For example, the existence of differentiated curriculum tracks based on ability and future plans, which typically distinguish between college-bound and other students, suggests that differentiated learning environments, with different access to instructional and interpersonal resources, exists above the classroom level. Similarly, at the secondary level, friendship groups typically cut across classroom boundaries and are often quite dependent upon patterns of participation in extra-curricular activities.

Additionally, at both the elementary and secondary level there are a number of both organizational and management issues which are likely to influence school effects. I have in mind here a number of studies which have identified schools which are particularly effective in the

instruction of minority and low SES students. Studies such as those conducted by Wilbur Brookover et. al. (1977) at Michigan State and Ron Edmonds at Harvard have been able to identify schools in which the achievement levels of students are higher than would be predicted by the family background of the students. These studies have identified several school factors, such as strong leadership by the principal agreement among the staff as to the nature of the instructional goals of the school, and high expectations for pupil performance, which distinguish these schools from other, less effective schools. We know enough about schools as organizations already to know that agreement on goals is rare and problematic (Weik, 1976) that there are strong limitations on the opportunities and resources available to principals to exert leadership and to manage and influence teacher behavior and beliefs, (Bidwell, 1965; Lortie, 1969; Weik, 1976; Cohen, 1978) and that staff expectations for high pupil performance in predominantly low status schools is infrequent. What we don't yet have is a good theory of the social organization of schools which can help us understand how the factors which seem to make these schools unusually effective come about, or how they can be developed and encouraged elsewhere.

In sum, then, I'm suggesting that research which is sensitive to, and focused upon, the social and organizational properties of schools and classrooms is likely to hold considerable promise for increasing the effectiveness of schools.

And from my vantage point at NIE, I'm pleased and satisfied to see that much of this research is being done. I anticipate that within several years, instead of debating whether or not schools make a difference, we can engage in lively and well-informed discussions of ways to improve the schooling experience and learning of youngsters.

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